Date: Mon, 7 Mar 94 04:30:18 PST
From: Ham-Ant Mailing List and Newsgroup <ham-ant@ucsd.edu>
Errors-To: Ham-Ant-Errors@UCSD.Edu
Reply-To: Ham-Ant@UCSD.Edu
Precedence: Bulk
Subject: Ham-Ant Digest V94 #57
To: Ham-Ant

Ham-Ant Digest   Mon, 7 Mar 94   Volume 94 : Issue   57

Today's Topics:

Send Replies or notes for publication to: <Ham-Ant@UCSD.Edu>
Send subscription requests to: <Ham-Ant-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Ant Digest are available
(by FTP only) from UCSD.Edu in directory "mailarchives/ham-ant".

Date: 2 Mar 94 00:44:56 GMT
From: hp-cv!hp-pcd!hpcvsnz!tomb@hplabs.hp.com
Subject: 1/2 wave whip?
To: ham-ant@ucsd.edu

James Bach (c2xjcb@kocrsv01.delcoelect.com) wrote:

: Another possible "matching network" is to feed the antenna with a
: 1/4-wave section of coax. A 1/4-wave section of coax transforms
: ("inverts" for want of a better term) the high FeedPoint impedance
: of the 1/2 (and 5/8?) antenna into a low impedance. This isn't

: perfect, and might require some "cut and try" to match well, but . . .

A transmission line transformer is certainly a valid way to get
a match between two impedances. First, I'd like to say that I
offered the coil/capacitor idea because I find it much easier to
tune, and quite a bit smaller. But use what's easiest for you.

On transmission line matching: it's very helpful to have a Smith
chart handy to do the work on. You don't want to expect to get a
match with a series piece of line of the same impedance you are using
for a feed line, though, because that's just like using a longer piece
of the same feedline. You would use a piece of line nominally
sqrt(Zload*Zgen) to do a perfect match in 1/4 wave, and that turns
out to be a pretty high impedance for feeding a 1/2 wave resonant
antenna, which is likely to be in excess of 1000 ohms. 200+ ohm
coax is hard to come by. Some J-poles do this with open-wire line
(feeding the end of the open-wire line, not tapping up on it), and
this should work fine. You need to get the impedance of the open-
wire line right for it to work. You can also use shunt sections of
line as well as series, to effectively add reactances and get from
essentially any impedance to any other impedance. This all works
quite well if you know the load and desired impedances, but if you
aren't quite sure of the load, it can lead to a lot of cutting--
assuming you aren't lucky enough to have coax "trombone" sections.
This is especially true if you only have an SWR meter to monitor
things with. It's also quite possible to do a combination of the
two: for example, a series section of line just over 1/4 wave long,
then a shunt variable capacitor. Then you can tune for min SWR,
trim the coax and see if you can tune for yet lower SWR, etc.

73, K7ITM

Date: Sat, 5 Mar 94 03:45:43 -0500
From: ihnp4.ucsd.edu!sdd.hp.com!nigel.msen.com!yale.edu!noc.near.net!
news.delphi.com!usenet@network.ucsd.edu
Subject: Antenna gain: dB,dBi,dBic ??
To: ham-ant@ucsd.edu

Karl Beckman <CSLE87> writes:

>> Can anyone help me. I am trying to interpret various antenna gain specs for
>> a variety of circularly polarized antennas. The specs usually use dB, dBi
>> or dBic.
>>
>> What is the definition of these units and how are they related to each
>> other ?? Does dBi mean the gain relative to an isotropic radiator ?

>> Does dBic mean the gain relative to an isotropic circularly polarized
>> radiator. Can one meaningfully convert from one to the other ?

As has been mentioned, dBi=dB relative to isotropic radiator.
Therefore, 0 dBd=2.14dBi
dB=God only knows. I
I've noticed (particularly in the cellular industry) that when an antenna gain is quoted simply in 'dB' they usually mean dBd, since it's an easy (comparison) measurement for the manufacturer.
And dBic=dB relative to isotropic circularly polarized radiator. But to get from circular to linear...there is a way.
First, dBic will apply to any circularly polarized antenna, a reflector, helix, spiral, what have you.
Second, ingrained in dBic is the concept of AXIAL RATIO. This is the ratio between the magnitudes of the semi-major and semi-minor axes of the polarization ellipse...or more simply put, the ratio of the amplitudes of the dominant linear polarization to th
e amplitude of the polarization orthogonal to the dominant.
So a perfect circularly polarized antenna has an AR of 1 (or 0 dB), and a perfectly linear dipole has an AR of 0 (or -infinity dB).
Once you know the AR of the circularly polarized antenna, you can convert between dBic and dBi (sometimes you will see dBiL--dBi to linear radiator, which is actually redundant--it just points out that the reference radiator is purely linearly polarized).

REFERENCE: See Ludwig, A.C. "A Simple Graph for Determining Polarization Loss", Microwave Journal, Sept. 1976, p. 63.
This article is excerpted with editorial comments in the August 1983 IEEE Antennas and Propagation Society Newsletter, p. 28.
Good Luck! Scott Townley NX7U

Date: Sat, 5 Mar 94 03:54:09 -0500
From: ihnp4.ucsd.edu!sdd.hp.com!nigel.msen.com!yale.edu!noc.near.net!news.delphi.com!usenet@network.ucsd.edu
Subject: Antenna on roof, which ground?
To: ham-ant@ucsd.edu

Elendir <elendir@enst.fr> writes:

>: I have an antenna mounted on the roof of my apartment building.
>: The roof is itself some 200 feet at least off the ground. The actual
>: antenna is roughly 7 feet off the roof at the edge. Now, my question is
>: this, should I consider the antenna to be 207 feet from the ground, or
>: 7 feet from the ground, or some complex in between figure. This is a
>: 20 meter resonant dipole we're talking about. What kind of effect will
>: such a setup have on my radiation pattern.

I disagree with previous responses.
You actually have an antenna "some complex number in between" figure, between 7 feet and 207 feet.
The issue is the difference between "near-fields" and "far-fields". The "near-fields", which affect the antenna impedance, are affected by the presence of the concrete building, rebar, miscellaneous wiring in the vicinity, etc. Usually those metallic obj
ects within a wavelength (or slightly less) will be close enough to have some effect.
The "near-field" coupling to these metallic objects will change the antenna's apparent impedance, and may affect the total amoutnt of power actually radiated by the antenna (since some of the power is getting sucked up by these other objects, and radiating
(?) who knows where).
The "far-field" region of the antenna is where the radiating takes place.
Txxxx The actual height of the antenna ABOVE THE REFLECTION POINT (which is USUALLY, but not always, the earth) will determine "how high" the antenna is.
In your case, it depends on the environment around you. Are you the only 200' building in an otherwise open field? Or are there several 100' buildings around you? The actual "height" of your antenna for radiation pattern purposes (this is a number techn
ically called height above average terrain--HAAT--which is usually used in the VHF/UHF range) is the height above the average "clutter" level for perhaps 10's of wavelengths away.
So if you're the tallest building but it's 100' buildings for several km about you, your antenna height is 100'.
Scott Townley NX7U

Date: Sat, 5 Mar 94 04:01:08 -0500
From: ihnp4.ucsd.edu!swrinde!sdd.hp.com!nigel.msen.com!yale.edu!noc.near.net!news.delphi.com!usenet@network.ucsd.edu
Subject: Conical Monopole
To: ham-ant@ucsd.edu

Bill Turini <turini@gdls.com> writes:

>Does anyone have any references to the design and/or construction
>of a conical monopole antenna?
>
>Thanks
>
>Bill

Conical monopole is also known as umbrella antenna. Further (more practical) literature references are:

Belrose, "Folded-Umbrella-top loaded vertical antenna", Sept. 1982 Ham Radio
Smith and Johnson, "Performance of Small Antennas", Proceedings of the IRE,
October 1947, pp. 1026-1038.***this one is definitive, all measured data!***

Happy Reading Scott Townley NX7U nx7u@aol.com

Date: Tue, 1 Mar 1994 12:25:45 GMT
From: ihnp4.ucsd.edu!usc!howland.reston.ans.net!newsserver.jvnc.net!
raffles.technet.sg!ntuix!ntuvax.ntu.ac.sg!asirene@network.ucsd.edu
Subject: Dipole or Vertical for DX?
To: ham-ant@ucsd.edu

Hi,

     Just wanted to know if a dipole or vertical performs better for QRP DX?
     This is on 20 meters.

73 de 9V Daniel

Date: Mon, 7 Mar 1994 03:51:38 GMT
From: ihnp4.ucsd.edu!sdd.hp.com!col.hp.com!srgenprp!frankb@network.ucsd.edu
Subject: Discone Design Parameters
To: ham-ant@ucsd.edu

Chuck Bennett (bennett@zeno.unca.edu) wrote:

& Many commercial discones incorporate a vertical element designed to increase
& the 10:1 bandwith to extend from, say 50 - 1300 MHz. Does anyone know how
& this is done. How long is the element and where does it connect - to the
& disk or to the cone?

The vertical element attaches to the disc. I have a Diamond discone. The
"discone" portion of the antenna is quite good from 110MHz to 1300MHz.
The vertical radial is resonant at 50MHz and has a very sharp resonance,
it is only good a few hundred kilohertz in the cordless phone/6meter bands
if you are transmitting. It is so so for reception from around CB to 110MHz,
but the return loss is only about 3 dB (I don't know what that is in SWR off
the top of my head, maybe 3:1?) over most of that range. Trim the vertical
part for the frequency (singular) where you want to transmit, treat it just
like any other 1/4 wave vertical. The Diamond discone vertical has a loading
coil at the bottom.

--
Frank Ball   1UR-M   frankb@sad.hp.com   (707) 794-4168 work,

Hewlett Packard (707) 794-3844 fax, (707) 538-3693 home
1212 Valley House Drive IT175, XT350, Seca 750, '62 F-100, PL510
Rohnert Park CA 94928-4999 KC6WUG, LAW, AMA, Dod #7566, NMLRA, NRA.

Date: 5 Mar 1994 04:39:04 -0500
From: ihnp4.ucsd.edu!agate!howland.reston.ans.net!europa.eng.gtefsd.com!
news.ans.net!hp81.prod.aol.net!search01.news.aol.com!not-for-mail@network.ucsd.edu
Subject: Ground Wave Propagation
To: ham-ant@ucsd.edu

goodness, there's a ton of open-literature articles on this.
Most of the pioneering work was done in the 1940's.
Try:
Norton, "Physical Reality of Space and Surface Waves in the Radiation Field of
Radio Antennas", Proc. IRE, Sept. 1937
Burrows, "The Surface Wave in Radio Propagation over Plane Earth", Proc. IRE,
Feb. 1937
Norton, "Propagation of Radio Waves over the Surface of the Earth and in the
Upper Atmosphere", Proc. IRE, Oct. 1936 and Sept. 1937 (two parts).
Norton, "The Calculation of Ground-Wave Field Intensity over a Finitely
Conducting Spherical Earth", Proc. IRE, Dec. 1941.
Happy Reading! Scott Townley nx7u@aol.com

Date: 7 Mar 1994 02:47:39 GMT
From: ihnp4.ucsd.edu!sdd.hp.com!think.com!hsdndev!dartvax.dartmouth.edu!
usenet@network.ucsd.edu
Subject: Hustler G6-270R
To: ham-ant@ucsd.edu

     I'm looking for any opinions, good or bad, on the Hustler G6-270R
2m/440
base station antenna. I would be using it for packet and voice
operation.
Also, if anyone has a used one to sell, make me an offer...

==
Kenneth E. Harker N1PVB Dartmouth College Amateur Packet Radio
kenneth.e.harker@dartmouth.edu Hinman Box 1262 n1pvb@w1et.nh.usa.na
(603) 643-6549 Hanover, NH 03755 or n1pvb-5 on 144.99
==
             (PGP Public Key now available on request)

Date: Mon, 7 Mar 1994 00:42:02 GMT
From: ihnp4.ucsd.edu!swrinde!sgiblab!gatekeeper.us.oracle.com!oracle!unrepliable!
bounce@network.ucsd.edu
Subject: Limited space antennas - MFJ vs. Isopole
To: ham-ant@ucsd.edu

I am considering getting a limited space antenna and have noticed that
the Isopole has gotten good reviews.

However, MFJ offers something that is similar and somewhat cheaper. Has
anyone had the opportunity to compare the two? If not, then experiences
with each would be welcome.

Thanks,
Rick
Rick Wessman
Network Products Division
Oracle Corporation
rwessman@us.oracle.com

Date: 5 Mar 1994 04:25:08 -0500
From: ihnp4.ucsd.edu!usc!howland.reston.ans.net!europa.eng.gtefsd.com!
news.ans.net!hp81.prod.aol.net!search01.news.aol.com!not-for-mail@network.ucsd.edu
Subject: NEC VHF Analysis Problem
To: ham-ant@ucsd.edu

>I chose to model the SO-239 itself as four wire elements arranged in a
>small square, to which the radials attach at the corners. The model is
>completed by adding the vertical element isolated (unattached) at the
>center of the square and running up from there. This element is fed with
>a simple voltage source at the bottom end.

The problem with your NEC results is that NEC cannot model an electrically
small loop like the one you gave it for the flange of the SO-239 connector.

The numerical precision goes to pot on loops less than about 0.1 wavelength in
circumference. This is a well-known shortcoming to modelling in NEC.
Scott Townley nx7u@aol.com

Date: 05 Mar 1994 16:51:41 GMT
From: ihnp4.ucsd.edu!usc!yeshua.marcam.com!zip.eecs.umich.edu!
newsxfer.itd.umich.edu!csd475b!newsserv!majewski@network.ucsd.edu
Subject: Opinions sought: CushCraft D40 dipole

To: ham-ant@ucsd.edu

Hello-

  I am thinking about purchasing a CushCraft D40 loaded, rotatable dipole for 40m. My plan is to install it at the top of my tower -- about 70ft up.

  I am interested in hearing from persons who have or have used one of these antennas. Were you satisfied with its performance, both electrically and mechanically? I'd also like to hear about similar antennas offered by other manufacturers.

  Thanks and 73!

Ron (wb8ruq).
--

Ron Majewski (majewski@erim.org)

The Environmental Research Institute of Michigan

Date: 7 Mar 1994 01:35:03 GMT
From: ihnp4.ucsd.edu!usc!howland.reston.ans.net!wupost!udel!news.sprintlink.net!connected.com!krel.iea.com!comtch!pfeuffer@network.ucsd.edu
Subject: Question about mobile antenna 40/80m
To: ham-ant@ucsd.edu

I've used the Hustler a lot on 40 / 80 and found they work FB -- In fact much better than I had a right to expect. I could rotate the lobe (ant mounted on driver rear quarter) and worked much DX out of the North East.

Joe - KW1K

==========

Manne Eichenbrenner (manne@p10.life.sub.org) wrote:
: Hello,

: I search for experiences about a Hustler Mobile antenna.
: Can somebody help me in this topic?

: with a friendly smile, Manne...

Date: Sat, 5 Mar 94 04:07:52 -0500
From: ihnp4.ucsd.edu!sdd.hp.com!nigel.msen.com!yale.edu!noc.near.net!
news.delphi.com!usenet@network.ucsd.edu
To: ham-ant@ucsd.edu

References <2kk57u$rt9@sugar.NeoSoft.COM>, <CSLE87-280294100730@145.39.1.10>,
<hamilton.762762011@BIX.com>o
Subject : Re: Simple Signal Question

hamilton on BIX <hamilton@BIX.com> writes:

>In article <2kk57u$rt9@sugar.NeoSoft.COM>, dlc@sugar.NeoSoft.COM (Dane L.
>Cantwell) wrote:
>
>> A friend and I were talking about cellular phones. He is in the market
>> for one and we were talking about the merits of a "full size" phone at 3
>> watts versus a portable at 0.6 watts. It was my point that the extra
>> transmission power is discounted because the signal received at tower is
>> related to the square of the distance to the tower.... therefore you
>> don't get anything like 5 times the range with a 3 watt model over a 0.6
>> watt unit. Is this right in theory? How about the real world?

The responses are correct about the cell powering down mobiles, etc., but one
respondant mentioned "spend your money on a better antenna"
Please don't. In the reverse channel (that is, mobile to base) poweris power.
If you have a high gain antenna, the cell cannot power down your unit
sufficiently to keep the system happy. And only half of the problem is
receiver protection (at the base)-
-ixxxx it's also co-channel interference from the mobile to the next frequency
reused cell. If the cell can't power you down properly, your signal could
propagate into the next cochannel cell and cause us all sorts of problems.
p.s. path loss is -40dB/decade in the ideal case, but out west here it's
actually closer to -25dB to -30 dB/decade...which makes the power down ability
even more important to make the frequency plan work!
Scott Townley NX7U an alleged employee of a major cellular carrier nx7u@aol.com

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Date: 1 Mar 94 23:31:06 GMT
From: agate!howland.reston.ans.net!math.ohio-state.edu!news.acns.nwu.edu!
casbah.acns.nwu.edu!rdewan@ucbvax.berkeley.edu
To: ham-ant@ucsd.edu

References <henrysCLzps3.4Ez@netcom.com>, <1994Mar1.162350.22173@ke4zv.atl.ga.us>,
<2l0bor$g9m@ncar.ucar.edu>h.acns
Subject : Re: MFJ SWR Analyzers

In article <2l0bor$g9m@ncar.ucar.edu>, Kim Elmore <elmore@rap.ucar.edu> wrote:

>Taking resonance, when the antenna impedance is purely resistive; any
>deviation from that point will yield a rise in SWR regardless of the
>impedance value due to the reactive components. Have I missed
>something?
>

I am afraid so. If what you say were true then it would not be possible
to match, let us say 10 ohm resistive, with a 50 ohm system using
only reactive components. But this is not correct.

Reductio ad absurdum implies...

Rajiv
aa9ch
r-dewan@nwu.edu

End of Ham-Ant Digest V94 #57
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